REMARKS

This application contains claims 1-28. Claims 5 and 16 have been amended to correct informalities. No new matter has been introduced. Reconsideration is respectfully requested.

Claims 25-28 were rejected under 35 U.S.C. 102(e) over Toklu et al. (U.S. Patent 6,549,643). Applicant respectfully traverses this rejection.

Toklu describes a system and method for selecting key-frames of video data in a video file or stream. Toklu assumes that the data have already been partitioned into video segments, preferably video shots, using a method described in another patent (col. 6, lines 54-60). His system then chooses key-frames to represent the video segments and eliminates the key-frames that are visually similar (col. 6, lines 29-34). The key frames in each segment may include the first frame (col. 4, line 1), the first and last frames (col. 4, lines 23-24), or some predefined number of frames (col. 4, line 6), depending on the characteristics of the segment.

Independent claim 25 recites a method for organizing a sequence of video frames that begins with generating a first portion of the segment, which is bounded by a bounding subset comprising at least three of the frames. One of the frames in the first portion is selected as a representative frame. A second portion of the segment is then generated by adding further frames in the sequence whose distances from the representative frame are within a predefined bound.

Toklu fails to teach or suggest any of the limitations of claim 25, with the possible exception of the step of "selecting... a representative frame." As noted above, Toklu takes as a given that the video segments have already been defined. Therefore, Toklu teaches neither "generating a first portion of a segment..." nor "generating a second portion of the segment by adding to the segment further frames...." Toklu is concerned only with choosing key-frames. He never adds frames to his segments, and certainly does not add frames based on their distances from a representative frame as required by claim 25. The specific passages cited by the Examiner have nothing to do with adding frames to a segment.

The passages that the Examiner did cite in Toklu thus have little to do with the actual limitations of claim 25. The following table shows the claim limitations in juxtaposition with the cited passages:

Claim 25	Toklu (cited by Examiner)
for each frame... computing at least one parameter indicative of a characteristic of the frame	"Initially, the first frame of each motion activity segment of a given shot is selected as a key frame" (col. 10, lines 21-22). There is no mention in this passage of any parameter indicative of a frame characteristic.
determining distances between the frames... responsively to differences in the at least one parameter	"Next, additional key-frames are selected from each motion activity segment based on the amount of cumulative panning, tilting and zooming motion as follows" (col. 10, lines 23-31). There is no mention in this passage of any sort of distances (i.e., differences) between frames. On the contrary, the passage deals with cumulative characteristics over multiple frames.
finding, responsively to the distances, a bounding subset comprising at least three of the frames in the sequence	"The first step of the smoothing process is to eliminate the holes that are less than or equal to 3 frames long" (col. 9, lines 52-54). This step refers to smoothing of a binary motion activity (MA) curve by changing the MA values of a group of three or less consecutive frames from 0 to 1. The "hole" does not bound anything, nor is it found responsively to any sort of "distance."
such that the first portion [of the segment] comprises the frames in the sequence that are bounded by the... bounding subset	The cited passage (col. 10, lines 23-45) makes no mention of the "holes" identified by the Examiner with the bounding subset. It certainly does not suggest that the frames in the sequence are bounded by these "holes," or by any other subset of the frames.
generating a second portion of the segment by adding... further frames... while determining that the	"...all the cumulative sums are reset to zero, and the cumulative sum is measured commencing from the selected frame (step 223)..." (col. 10,

Claim 25	Toklu (cited by Examiner)
respective distances between the added further frames and the representative frame are within a predefined bound	lines 45-50). There is no suggestion in this passage of adding frames to a segment or of determining the distances between the added frames and a representative frame that was selected for the segment.

Thus, claim 25 is believed to be patentable over Toklu. In view of the patentability of claim 25, dependent claims 26-28, which depend from claim 25, are also believed to be patentable.

Notwithstanding the patentability of independent claim 25, dependent claims 26-28 are believed to be independently patentable over Toklu. For example, claim 26 recites that the bounding subset is selected so as to maximize a sum of the distances between all of the frames in the subset, while each of the distances is no greater than a predetermined maximum. In rejecting this claim, the Examiner cited col. 10, lines 35-45, in Toklu. The cited passage refers to thresholds applied to cumulative sums of panning, tilting, and zooming motions of the frames in a given motion segment (col. 10, lines 32-34). It has nothing to do with selecting the bounding subset so as to maximize a sum of the distances between the frames in the bounding subset. On the contrary, the frames in Toklu's "hole" (which the Examiner identified with the "bounding subset" of claim 25) are consecutive frames that have the same MA value. Thus, Toklu does not teach or even hint at the added limitations of claim 25. Similar arguments may be made with respect to claim 27 and 28, but they are omitted here for the sake of brevity.

Claims 1-10, 12-21 and 23 were rejected under 35 U.S.C. 102(b) over Edgar et al. (U.S. Patent 5,537,530), while claims 11 and 22 were rejected under 35 U.S.C. 103(a) over Edgar. Applicant respectfully traverses these rejections.

With respect to the rejection over Edgar, Applicant pointed out in detail the distinctions of claims 1-23 over Edgar in the remarks submitted with the previous amendment in this case. In the present Official Action, however, the Examiner failed to relate to Applicant's arguments other than to state that they "have been considered but are moot in view of the new ground(s) of rejection." The grounds of rejection over

Edgar that are stated in the present Official Action, however, are simply a repetition of those stated previously, without regard to Applicant's remarks.

Furthermore, the Examiner himself, in his own remarks in this Official Action, appears to acknowledge that Edgar is deficient as a reference against claim 1 under 35 U.S.C. 102. On page 8, last paragraph, of the Official Action, the Examiner stated in relation to claim 1: "Edgar fails to distinctly point out generating a second portion by adding frames, which are similar to the representative frame with a second predefined threshold" (emphasis added). If this is the Examiner's position, then the rejection under 35 U.S.C. 102(b) should have been withdrawn. Nonetheless, since the Examiner has repeated the novelty rejection over Edgar, Applicant will reiterate the reasons why this rejection is incorrect.

Claim 1 recites a method for organizing a sequence of video frames made up of first and second portions in the following manner:

1) Starting from an initial frame, the first portion of a segment is defined by adding subsequent, similar frames to the segment.

2) One of the frames in the first portion is chosen to be the representative frame for the entire segment.

3) Using this selected representative frame, the computer then goes on (automatically) to add to the segment further frames having a measure of similarity to the representative frame that is within a predefined bound in order to make up the second portion of the segment. In other words, after selecting the representative frame, the computer automatically measures the similarity between the representative frame and subsequent frames, and uses this similarity in determining which subsequent frames to add to the segment.

Edgar describes a method for video editing by locating segment boundaries and reordering segment sequences. A computerized process analyzes digitized video source material and identifies boundaries of segments or scene changes (col. 4, lines 13-17). Once the system has determined all relevant scene changes, it attempts to find the most representative image from each scene sequence to represent that sequence (col. 12, lines 1-13). After the segments have been identified in this manner, Edgar's representative frames are displayed, permitting a user to perform video editing by manipulating these representative frames (col. 3, lines 34-46). According to Edgar, the user may

consolidate selected representative frames ("stills") in order to put together a "meaningful collection of video from the user's perspective, which was not necessarily sequential as originally created..." (col. 4, lines 51-57).

In rejecting claim 1 in the present Official Action, the Examiner referred to col. 4, lines 57-61, and to col. 7, line 56 - col. 8, line 1, in Edgar, as purportedly teaching the step of "generating a second portion of the segment by adding automatically... still further frames... while determining that the measure of similarity of each added frame to the representative is within a second predefined bound." As Applicant has pointed out in the past, Edgar neither teaches nor suggests these limitations. The cited passage in col. 4 of Edgar relates to selection of frames by a user, not automatic selection without user intervention as required by claim 1. The passage in col. 7 relates to "eliminating or combining identified scene segments and corresponding still frames." Edgar suggests that the system could also determine a value specifying the likelihood that the "particular still frame" (i.e., the end frame, or perhaps the starting frame in a segment) corresponds to a "true scene boundary."

In maintaining the rejection of claim 1 under 35 U.S.C. 102(b), however, the Examiner still did not relate to the specific method of adding further frames to the sequence that is recited in claim 1: determining that a measure of similarity between the representative frame and subsequent frames in the video sequence is within a predefined bound. Although Edgar states generally that a "likelihood value" could be used in determining whether a certain frame is a "true scene boundary," he gives no indication as to how this value is to be calculated. Edgar makes not even the slightest suggestion that the likelihood value might somehow be a measure of similarity between the representative frame and subsequent frames, or that some predefined bound be placed on this measure, as required by claim 1. As stated in MPEP 2131:

> To anticipate a claim, the reference must teach every element of the claim. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Edgar's vague statement about a "likelihood value" does not meet this burden with respect to claim 1.

Thus, Applicant respectfully maintains that claim 1, as presented previously, is patentable over Edgar. In view of the patentability of claim 1, claims 2-11 and 24, which depend from claim 1, are believed to be patentable, as well.

Claim 12 recites apparatus for organizing a sequence of video frames, while claim 23 recites a computer software product, both of which operate on principles similar to the method recited in claim 1. These claims were rejected over Edgar on grounds similar to the grounds of rejection cited against claim 1. For the reasons stated above, Applicant respectfully submits that claims 12 and 23 are patentable over the cited art, as are claims 13-21, which depend from claim 12.

Claims 1-10, 12-21 and 23 were also rejected under 35 U.S.C. 103(a) over Toklu. In fact, based on the Examiner's detailed remarks, it appears that he intended to reject these claims under 35 U.S.C. 103(a) over Edgar in view of Toklu. Claims 11, 22 and 24 was also rejected under 35 U.S.C. 103(a) over Edgar in view of Toklu. Applicant respectfully traverses these rejections.

In rejecting claim 1 over Edgar in view of Toklu, the Examiner stated that "Edgar fails to distinctly point out generating a second portion by adding frames, which are similar to the representative frame with a second predefined threshold," but maintained that Toklu teaches this step. The actual limitation stated in the claim is that "the measure of similarity of each added frame to the representative frame is within a second predefined bound." Toklu neither teaches for suggests such a limitation.

As noted above in reference to claim 25, Toklu receives each video segment as a given (col. 6, lines 54-60) and does not add frames to the segment, either automatically or otherwise. The Examiner maintained that Toklu teaches adding frames in the manner recited by claim 1 in col. 10, lines 35-45; but this passage simply relates to selection of the key frame for a motion activity segment (lines 44-45). The selection is based on cumulative sums of panning, tilting and zooming motions. In other words, Toklu does not suggest measuring similarities between each added frame and a representative frame, as required by claim 1, but rather summing motion over many frames. The passage neither teaches nor suggests "generating a second portion of the segment by adding... further frames in the sequence," let alone "determining that the measure of similarity of each added frame to the representative frame is within a second predefined bound," as recited in claim 1. The fact that Toklu may apply a threshold to

his motion sums is irrelevant, since there is no relation between these motion sums and the measure of similarity taught by the present invention.

Therefore, claim 1 is believed to be patentable over Edgar and Toklu, whether these references are taken individually or in combination. In view of the patentability of claim 1, dependent claims 2-11 and 24 are also believed to be patentable over Edgar and Toklu.

Furthermore, notwithstanding the patentability of claim 1, dependent claims 2-11 and 24 are believed to be independently patentable. For example, claim 5 recites the use of a bounding subset in adding further frames to the sequence. The Examiner stated (page 6 in the Official Action) that Edgar teaches this limitation in col. 4, lines 57-61, and col. 8, lines 12-16. The passage in col. 4, as noted previously, refers to selection by a user of frames making up a sequence and a representative frame for the sequence. The passage in col. 8 describes an image "fingerprint" that is used to find scene transitions. Neither in these passages, nor in any other passages, does Edgar even hint at the use of a bounding subset in adding further frames to a segment "while the distance between each of the added frames and the frames in the representative set is within the predefined bound," as required by claim 5.

Elsewhere the Examiner stated (page 10 in the Official Action) that Toklu teaches the added limitations of claim 5. As pointed out above in relation to claim 25, however, Toklu also fails to teach or suggest the use of a bounding subset in adding further frames to the sequence. The Examiner maintained that Toklu teaches the limitations of claim 5 in col. 10, lines 21-51. The cited passage refers to selection of key frames based on computation of cumulative motion sums. It makes no mention or suggestion of any sort of bounding subset.

Claims 6, 7 and 24 add further limitations regarding the selection and use of the bounding subset. Since Edgar and Toklu both fail to teach or suggest the use of a bounding subset, they clearly cannot be taken to teach the added limitations in these claims.

Thus, claims 5-7 and 24 recite independently-patentable subject matter. Similar arguments may be made with respect to the other dependent claims, but these arguments are omitted here for the sake of brevity.

Claim 12 recites apparatus for organizing a sequence of video frames, while claim 23 recites a computer software product, both of which operate on principles similar to the method recited in claim 1. These claims were rejected over Edgar (both taken alone and in view of Toklu) on grounds similar to the grounds of rejection cited against claim 1. For the reasons stated above, Applicant respectfully submits that claims 12 and 23 are patentable over the cited art, as are claims 13-21, which depend from claim 12.

Applicant believes the amendments and remarks stated above to be fully responsive to all of the grounds of rejection raised by the Examiner. In view of these amendments and remarks, all the claims in the present patent application are believed to be in condition for allowance. Prompt notice to this effect is requested.

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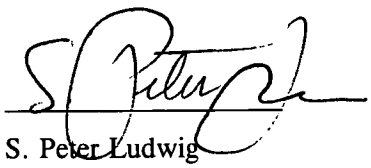
Respectfully submitted



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